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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,989	03/29/2007	Yuichi Ono	082368-008100US	5847

20350 7590 03/23/2010

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EXAMINER	
KOLKER, DANIEL E	
ART UNIT	**PAPER NUMBER**
1649	

MAIL DATE	DELIVERY MODE
03/23/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,989	ONO ET AL.	
	Examiner	Art Unit	
	DANIEL KOLKER	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,9-12 and 27-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *27-31* is/are allowed.

6)☒ Claim(s) *1,9-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The remarks and amendments filed 6 January 2010 have been entered. Claims 1, 9-12, and 27-31 are pending and under examination.

Withdrawn Rejections and Objections

2. The following rejections and objections set forth in the previous office action have been withdrawn:

A. The rejection under 35 USC 112, second paragraph is withdrawn in light of the amendments which clarify the scope of patent protection sought.

B. The rejection under 35 USC 112, first paragraph is withdrawn in light of the amendments which delete the language the examiner had considered not to be fully described.

C. The rejection of claims 3-4 under 35 USC 102(b) over Millonig is moot as the claims are canceled.

Rejections Maintained

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Smidt 2000 (Nature Neuroscience 3:337-341).

This rejection stands for the reasons previously made of record and explained in further detail below. Smidt teaches nucleic acids encoding Lmx1b, as well as methods of using same. The nucleic acid is a fragment of rat Lmx1b, and encodes an amino acid that is 100% identical to the amino acids encoded by mouse Lmx1b with GenBank accession number AF078166; see p. 337 second column first paragraph. The nucleic acid used by Smidt was 115 bp long, as encompassed by claims 1 and 9. Although the nucleic acids identified by SEQ ID NO: in independent claims 1 and 9 are not identical to those disclosed by Smidt, the claims do not require identity. The claims are considerably broader, in that they are drawn to methods of using nucleic acids that hybridize to SEQ ID NO:13, 15, or 17, or nucleic acids that hybridize to

nucleic acids encoding SEQ ID NO:14, 16, or 18. The alignments shown below indicates that AF078166, i.e. the nucleic acid encoded by Smidt's cDNA, will hybridize to any of SEQ ID NO:13, 15, or 17. In the alignments, the top line is the nucleic acids sequence from the present application, and the bottom line is AF078166. Given the long stretches of identity across the entirety of the sequences, the nucleic acids from Smidt will inherently hybridize to SEQ ID NO:13, 15, and 17.

SEQ ID NO:13 aligned with AF078166

```
Qy        220 ATGTTGGACGGCCTGAAGATGGAGGAGAACTTTCAAAGTGCGATTGAGACCTCGGCATCT 279
              ||||||||||||  | ||||||||||||  ||          ||  ||  | ||  |||  |
Db          1 ATGTTGGACGGCATCAAGATGGAGGAGCAC---------GCCCTT-CGCCCCGGGC--CC 48

Qy        280 TTCTCCTCT-------TTGCTGGGCAGAGCGGTGAGCCC----CAAGTCTGTCTGCGAGG 328
                | ||  ||        ||||||||    | |   ||||    |  | | ||||||||||
Db         49 GCCACC-CTGGGGGTGCTGCTGGGCT---CCGACTGCCCGCATCCCG-CCGTCTGCGAGG 103

Qy        329 GCTGTCAGCGGGTCATCTCGGACAGGTTTCTGCTGCGGCTCAACGACAGCTTCTGGCACG 388
              ||||  ||||||  ||||||  |||  |  ||  |||  ||||  |||||||    | ||||||||
Db        104 GCTGCCAGCGGCCCATCTCCGACCGCTTCCTGATGCGAGTCAACGAGTCGTCCTGGCACG 163

Qy        389 AGCAATGCGTGCAGTGTGCCTCCTG-CAAAGAGCCCCTGGAGACCACCTGCTTCTACCGG 447
              ||  |  ||  ||||||| ||  |  ||  ||   ||  ||||    ||||  |||||  ||  ||||
Db        164 AGGAGTGTTTGCAGTGCGCGGCATGTCAGCAAG-CCCTCACCACCAGCTGCTACTTCCGG 222

Qy        448 GACAAGAAGCTCTACTGCAAGTACCACTACGAGAAACTGTTTGCTGTCAAATGTGGGGGC 507
              ||   ||| || ||||||||  |  ||||| |  | || || || |  || ||  | |||
Db        223 GATCGGAAACTGTACTGCAAACAAGACTACCAACAGCTCTTCGCGGCAAAGTGCAGCGGC 282

Qy        508 TGCTTCGAGGCCATTGCGCCCAATGAGTTTGTCATGCGTGCCCAGAAGAGCGTATACCAC 567
              ||| | |||   || ||||| |  ||||| |||||||| || | | || | || ||||||
Db        283 TGCATGGAGAAGATCGCGCCTACCGAGTTCGTCATGCGGGCGCTGGAGTGTGTGTACCAC 342

Qy        568 CTGAGCTGCTTCTGCTGCTGCGTCTGTGAGCGACAGCTGCAGAAGGGTGACGAGTTTGTC 627
               || |||| |||||||||||  || || ||| | || ||||  |||||  |||||||| ||
Db        343 TTGGGCTGTTTCTGCTGCTGTGTGTGCGAGAGGCAACTGCGCAAGGGGGACGAGTTCGTG 402

Qy        628 CTGAAGGAGGGCCAGCTGCTCTGCAAAGGGGACTATGAGAAAGAACGGGAGCTGCTGAGC 687
              || |||||||||||||||| ||||| || |||||||||| ||    || |||||  |||
Db        403 CTCAAGGAGGGCCAGCTGCTGTGCAAGGGTGACTATGAGAAGGAGAAAGACCTGCTCAGC 462

Qy        688 CTGGTGAGCCCTGCGGCCTCAGACTCAGGCAAAAGCGATGATGAGGA--GAGCCTTTGCA 745
                 |||||||| |  |  || ||||| |  || || || ||||| ||  ||| | |   |
Db        463 TCCGTGAGCCCGGACGAGTCTGACTCTGTGAAGAGTGAGGATGAAGATGGAGACATG--A 520

Qy        746 AGTCAGCCCATGGGGCAG--------GAAAAGGAGCATCAGAG--GACGGCAAGGACCAT 795
              || | | ||| |||||||        ||  |   |||   |||  ||||| || ||||
Db        521 AGCCGG-CCAAGGGGCAGGGCAGCCAGAGTAAAGGCAGTGGAGATGACGGGAAAGACCCG 579
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Qy        796 AAGCGACCCAAACGTCCCAGAACCATCCTGACCACTCAGCAGAGGAGAGCATTCAAGGCC 855
              |   | ||||||||  ||| ||||||||||  |||||  ||||||  | |||||  ||||||||
Db        580 AGAAGGCCCAAACGGCCCCGAACCATCCTCACCACACAGCAGCGAAGAGCTTTCAAGGCA 639

Qy        856 TCGTTTGAAGTATCCTCCAAGCCCTGCAGAAAGGTGAGGGAGACTCTGGCTGCGGAGACA 915
              || |||||  || ||||||||||||||  | |||||  | |||||  ||||  || ||||||
Db        640 TCCTTTGAGGTCTCCTCCAAGCCCTGTCGGAAGGTCCGAGAGACATTGGCAGCAGAGACA 699

Qy        916 GGGCTGAGTGTCCGTGTGGTTCAGGTGTGGTTCCAGAACCAGCGAGCCAAGATGAAGAAG 975
              || || || || ||||||||  |||||  |||||  ||||||||  ||||  ||||||||||||
Db        700 GGCCTCAGCGTGCGTGTGGTCCAGGTCTGGTTTCAGAACCAAAGAGCAAAGATGAAGAAG 759

Qy        976 CTGGCCCGGCGACAGCAGCAACAGCAACAGGACCAACAGAACACCCAGAGGCTGACTTCT 1035
              |||||||||  ||||  |||||||||   |||||  ||  ||||||  |||||  |||||
Db        760 CTGGCCCGGAGACACCAGCAACAG---CAGGAGCAGCAGAACTCCCAGCGGCTG------ 810

Qy       1036 GCTCAGACAAATGGTAGTGGGAATGCGGGCATGGAAGGGATCATGAACCCCTATACAACG 1095
                   | |||  |||  ||  ||  |  ||||||| || || |||  | ||||  ||  ||
Db        811 ----GGCCAAGAGGTTCTGTCAAGCC--GCATGGAGGGCATGATGGCCTCCTACACCGCG 864

Qy       1096 TTGCCCACCCCACAGCAGCTGC---TGGCCATTGAACAGAGCGTCTAC---AACTCTGAT 1149
               || ||  | ||  |||||||  |    |||||||  || ||||||  ||||   | |   ||
Db        865 CTGGCCCCTCCGCAGCAGCAGATCGTGGCCATGGAGCAGAGCCCCTACGGAAGCAGCGAC 924

Qy       1150 CCCTTCCGACAGGGTCTCACCCCACCCCAGATGCCTGGAGATCACATGCACCCCTATGGT 1209
              |||||||  ||||||  |||||  ||  |||||  |||||  ||  ||  |      ||  ||
Db        925 CCCTTCCAACAGGGCCTCACGCCGCCCCAAATGCCAGG-GAACG-----ACTCC------ 972

Qy       1210 GCTGAACCTCTTTTCCATGACTTGGATAGTGATGACACATCTCTCAGTAACCTGGGAGAC 1269
                        | |||||  ||  | |||||||||   ||  ||  ||||  | |||  | |||
Db        973 ---------ATCTTCCACGATATTGATAGTGAT---ACCTCCCTCACCAGCCTCAGCGAC 1020

Qy       1270 TGCTTCCTGGCAACCTCAGAAGCTGGGC-CCCTGCAGTCCAGAGTGGGAAACCCCATTGA 1328
              ||||||||  |   | ||  ||  | |||||  ||||||||  |  | |||||  ||||||||||
Db       1021 TGCTTCCTCGGCTCTTCCGACG-TGGGCTCCCTGCAGGCGCGCGTGGGGAACCCCATTGA 1079

Qy       1329 CCATCTGTACTCCATGCAGAATTCCTATTTCACCTCTTGA 1368
              ||  || ||||||||||||||  |||||  ||  ||||  |||
Db       1080 CCGGCTCTACTCCATGCAGAGCTCCTACTTTGCCTCCTGA 1119
```

SEQ ID NO:15 aligned with AF078166

```
Qy        222 ATGCTGGACGGCCTAAAGATGGAGGAGAACTTCCAAAGCGCGATCGACACCTCGGCCTCC 281
              ||| |||||||| | |||||||||||| ||  ||   || |   ||   ||   ||| ||
Db          1 ATGTTGGACGGCATCAAGATGGAGGAGCACGCCCTTCGCCC---CGGGCCC---GCCACC 54

Qy        282 TTCTCCTCGCTGCTGGGCAGAGCGGTGAGCCC----CAAGTCTGTCTGCGAGGGCTGTCA 337
               |      ||||||||||    | |   ||||    |  | | ||||||||||||||| ||
Db         55 CTGGGGGTGCTGCTGGGCT---CCGACTGCCCGCATCCCG-CCGTCTGCGAGGGCTGCCA 110

Qy        338 GCGGGTCATCTTGGACAGGTTTCTGCTGCGGCTCAACGACAGCTTCTGGCATGAGCAGTG 397
              ||||  |||||  ||| | || ||| ||||  |||||||    | |||||| ||| ||||
Db        111 GCGGCCCATCTCCGACCGCTTCCTGATGCGAGTCAACGAGTCGTCCTGGCACGAGGAGTG 170

Qy        398 CGTGCAGTGCGCCTCCTG-CAAAGAGCCCCTGGAGACCACCTGCTTCTACCGGGACAAGA 456
                |||||||||  | || ||   || ||||    |||| ||||| || ||||||   ||
Db        171 TTTGCAGTGCGCGGCATGTCAGCAAG-CCCTCACCACCAGCTGCTACTTCCGGGATCGGA 229

Qy        457 AGCTGTACTGCAAGTATGACTACGAGAAGCTGTTTGCTGTTAAATGTGGGGGCTGCTTCG 516
              | ||||||||||  | |||||| |  |||| || || |  || ||  | |||||| | |
Db        230 AACTGTACTGCAAACAAGACTACCAACAGCTCTTCGCGGCAAAGTGCAGCGGCTGCATGG 289

Qy        517 AGGCCATCGCTCCCAATGAGTTTGTTATGCGGGCCCAGAAGAGTGTATACCACCTGAGCT 576
              ||   ||||| || |  ||||| || |||||||| | | || |||| |||||| || |||
Db        290 AGAAGATCGCGCCTACCGAGTTCGTCATGCGGGCGCTGGAGTGTGTGTACCACTTGGGCT 349

Qy        577 GCTTCTGCTGCTGTGTCTGCGAGCGACAGCTTCAGAAGGGTGATGAGTTTGTCCTGAAGG 636
              | |||||||||||||| |||||| | || || |  ||||| || ||||| || || ||||
Db        350 GTTTCTGCTGCTGTGTGTGCGAGAGGCAACTGCGCAAGGGGGACGAGTTCGTGCTCAAGG 409

Qy        637 AGGGGCAGCTGCTCTGCAAAGGGGACTATGAGAAGGAGCGGGAGCTGCTCAGCCTGGTGA 696
              |||| |||||||| ||||| || ||||||||||||||||   || |||||||||   ||||
Db        410 AGGGCCAGCTGCTGTGCAAGGGTGACTATGAGAAGGAGAAAGACCTGCTCAGCTCCGTGA 469

Qy        697 GCCCAGCAGCCTCAGACTCAGGTAAAAGTGATGATGAAGAAAGTCTCTGCAAGTCAGCCC 756
              |||| |  |  || ||||| |  || ||||| ||||||||  |   |   ||| | | ||
Db        470 GCCCGGACGAGTCTGACTCTGTGAAGAGTGAGGATGAAGATGGAGACATGAAGCCGG-CC 528

Qy        757 ATGGGGCAGGG----------AAAGGAACTGCTGAGGAAGGCAAGGACCATAAGCGCCCC 806
              | |||||||||          ||||| | ||  || || || || ||||  |   | |||
Db        529 AAGGGGCAGGGCAGCCAGAGTAAAGGCAGTGGAGATGACGGGAAAGACCCGAGAAGGCCC 588

Qy        807 AAACGTCCGAGAACCATCTTGACAACTCAACAGAGGCGAGCATTCAAGGCCTCATTTGAA 866
              ||||| ||  |||||||| | || || || ||| |  |||| |||||||| || |||||
Db        589 AAACGGCCCCGAACCATCCTCACCACACAGCAGCGAAGAGCTTTCAAGGCATCCTTTGAG 648

Qy        867 GTATCCTCCAAGCCCTGCAGGAAGGTGAGAGAGACTCTGGCTGCAGAGACAGGGCTGAGT 926
              || |||||||||||||  |||||||  |||||||  |||| |||||||||| || ||
Db        649 GTCTCCTCCAAGCCCTGTCGGAAGGTCCGAGAGACATTGGCAGCAGAGACAGGCCTCAGC 708

Qy        927 GTCCGTGTCGTCCAGGTGTGGTTCCAAAACCAGAGAGCGAAGATGAAGAAGCTGGCCAGG 986
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            || ||||| |||||||| ||||| || ||||| ||||| |||||||||||||||||| ||
Db        709 GTGCGTGTGGTCCAGGTCTGGTTTCAGAACCAAAGAGCAAAGATGAAGAAGCTGGCCCGG 768

Qy        987 CGACAGCAGCAGCAGCAGCAAGATCAGCAGAACACCCAGAGGCTGAGCTCTGC---TCAG 1043
              |||| ||||| ||||||   || ||||||||| ||||| ||||| ||   |    || |
Db        769 AGACACCAGCAACAGCAG---GAGCAGCAGAACTCCCAGCGGCTGGGCCAAGAGGTTCTG 825

Qy       1044 ACAAACGGTGGTGGGAGTGCTGGGATGGAAGGAATCATGAACCCCTACACGGCTCTGCCC 1103
              ||| |            ||    ||||| || || |||  | ||||||| || ||| ||
Db        826 TCAAGC-----------CGC----ATGGAGGGCATGATGGCCTCCTACACCGCGCTGGCC 870

Qy       1104 ACCCCACAGCAGC---TCCTGGCCATCGAGCAGAGTGTCTAC---AGCTCAGATCCCTTC 1157
              | || |||||||   || ||||||| ||||||||   ||||   |||   || ||||||
Db        871 CCTCCGCAGCAGCAGATCGTGGCCATGGAGCAGAGCCCCTACGGAAGCAGCGACCCCTTC 930

Qy       1158 CGACAGGGTCTCACCCCACCCCAGATGCCTGGAGACCACATGCACCCTTATGGTGCCGAG 1217
              | |||||| ||||| || ||||| ||||| ||  || ||
Db        931 CAACAGGGCCTCACGCCGCCCCAAATGCCAGGGAACGACT-------------------- 970

Qy       1218 CCCCTTTTCCATGACCTGGATAGCGACGACACCTCCCTCAGTAACCTGGGTGATTGTTTC 1277
              || | ||||| ||  | |||||    || ||||||||||  | |||  | || || |||
Db        971 -CCATCTTCCACGATATTGATAG---TGATACCTCCCTCACCAGCCTCAGCGACTGCTTC 1026

Qy       1278 CTAGCAACCTCAGAAGCTGGGC-CTCTGCAGTCCAGAGTGGGAAACCCCATTGACCATCT 1336
              || |   | || || | ||||| | |||||| |  | ||||| ||||||||||||  ||
Db       1027 CTCGGCTCTTCCGACG-TGGGCTCCCTGCAGGCGCGCGTGGGGAACCCCATTGACCGGCT 1085

Qy       1337 GTACTCCATGCAGAATTCTTACTTCACATCTTGA 1370
              |||||||||||||  || |||||  | || |||
Db       1086 CTACTCCATGCAGAGCTCCTACTTTGCCTCCTGA 1119
```

SEQ ID NO:17 aligned with AF078166

```
Qy          1 TC---TGGCTTT-------TTCCACTTGGTGTGGT---GGT--TTGGGGAT--TCATTCA 43
              ||    |||           ||  | ||| || |    |||   ||||| |   ||  |
Db       1119 TCAGGAGGCAAAGTAGGAGCTCTGCATGGAGTAGAGCCGGTCAATGGGGTTCCCCACGCG 1060

Qy         44 TTCCTATTTCAGCATTCCACTGT--ATAGTCCAGAGGTGAGCAAG-GC-AAGGCTGGT-- 97
                |||    |||    ||   ||    ||  | ||||  ||||   ||  ||||||||
Db       1059 CGCCTG---CAGGGAGCCCACGTCGGAAGAGCCGAGG-AAGCAGTCGCTGAGGCTGGTGA 1004

Qy         98 GGGTGGCTCTGTTATCCATCTCCT-------------GTGTCCAAGC------GACTGC- 137
              ||| ||      |||| || || |             ||  ||  ||      | | ||
Db       1003 GGGAGGTATCACTATCAATATCGTGGAAGATGGAGTCGTTCCCTGGCATTTGGGGCGGCG 944

Qy        138 -----TCCAGTT-------GTCACCATGTTTCCAGT----------CACCAGGTGAGAGA 175
                  || |||       ||| |  || |||| ||          | ||| |     ||
Db        943 TGAGGCCCTGTTGGAAGGGGTCGC--TGCTTCC-GTAGGGGCTCTGCTCCATGGCCACGA 887

Qy        176 GACTCTG--GCTGCAGA---GACAGGGCTGAGT-----GTC--CGTGTCGTCCAGGTGTG 223
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                ||||  ||||| ||   | ||| || | ||     | |  | || | |||| | |
Db        886 ---TCTGCTGCTGCGGAGGGGCCAGCGCGGTGTAGGAGGCCATCATGCCCTCCATGCGGC 830

Qy        224 GTTCCAAAACCAGAGAGCGAAG--------------------ATGAAGAAGCTGG---- 258
               |  || ||||     ||  ||                      ||  |  |||||
Db        829 TTGACAGAACCTCTTGGCCCAGCCGCTGGGAGTTCTGCTGCTCCTGCTGTTGCTGGTGTC 770

Qy        259 -CCAGGCGACAGCAGCAGCAGC------------------AGCAAGATCAGCAGAACACC 299
               || |||  ||||  |  || |                  | | ||| | |  || |||
Db        769 TCCGGGC--CAGCTTCTTCATCTTTGCTCTTTGGTTCTGAAACCAGACCTG--GACCACA 714

Qy        300 CAGAGGCTGAG------CTCTG------------CTCAGA----CAAACGGTGGTGGGAG 337
               |  | ||||||      |||||             ||| ||    |  || | | | ||||
Db        713 CGCACGCTGAGGCCTGTCTCTGCTGCCAATGTCTCTCGGACCTTCCGACAGGGCTTGGAG 654

Qy        338 ---------------------------------TGCTGGGATGGAAGGA---ATCATGAA 361
                                                |||||  |  |  ||||    ||  |
Db        653 GAGACCTCAAAGGATGCCTTGAAAGCTCTTCGCTGCTGTGTGGTGAGGATGGTTCG-GGG 595

Qy        362 CC-------CCTACACGGCTC-TGCCC----ACCCCACAGC---------AGCT--CCTG 398
               ||       ||| | ||| || | |||     | |||| ||          |||  ||||
Db        594 CCGTTTGGGCCTTCTCGGGTCTTTCCCGTCATCTCCACTGCCTTTACTCTGGCTGCCCTG 535

Qy        399 GCCAT---CGAGCAGAGTGTCTACAGC----TCAGATCCCTTCCGACAGGGTCTCACCCC 451
               || |   |  ||    ||||| || |    ||    | ||||  |||| |||  || |
Db        534 CCCCTTGGCCGGCTTCATGTCTCCATCTTCATCCTCACTCTTC--ACAGAGTCAGACTCG 477

Qy        452 ACC-----CCAGATGC----CTGG-----AGAC--CACATG--CACCCTTATGGTGC--C 491
               ||     |  |  ||    | ||        |  | |||   |||||||     ||  |
Db        476 TCCGGGCTCACGGAGCTGAGCAGGTCTTTCTCCTTCTCATAGTCACCCTTGCACAGCAGC 417

Qy        492 GAGCCCCTTTTCCATGACCTGGATAGCGACGACACCTCCCTCAGTAACCTGGGTGATTGT 551
                 ||||    ||| ||| |  ||   || |  | |||  | ||||  |||
Db        416 TGGCCC----TCCTTGAGCACGAACTCGTC--CCCCTTGCGCAGTTGCCT---------- 373

Qy        552 TTCCTAGCAACCTCAGAAGCTG----GGCCTCTG---------CAGTCCAGAG------T 592
                  || |||  | ||| ||| |     |||   |         || ||||| |      |
Db        372 ---CTCGCACACACAGCAGCAGAAACAGCCCAAGTGGTACACACACTCCAGCGCCCGCAT 316

Qy        593 GGGAAACCCCATTGACCATCTGTACTCCATGCAGAATTCTTACTT---CAC--------- 640
               |   ||| |  | | |    | | ||||||||||       ||||   | |
Db        315 GACGAACTCGGTAGGCGCGATCTTCTCCATGCAGCCGCTGCACTTTGCCGCGAAGAGCTG 256

Qy        641 ------ATCTTG----------AGTCTTC---CCCTAGAGTT----CTG----------- 666
                    |||||          ||| | |   |||   |||     |||
Db        255 TTGGTAGTCTTGTTTGCAGTACAGTTTCCGATCCCGGAAGTAGCAGCTGGTGGTGAGGGC 196

Qy        667 ----TGACTAGGCTCCCATATGGAACA-ACCATATTCTTTGAGGGGTC----ACTGGCTT 717
                  ||||  | | | ||     ||||  ||   | |   || |  ||    ||| || |
Db        195 TTGCTGACATGCCGCGCACTGCAAACACTCCTCGTGCCAGGACGACTCGTTGACTCGCAT 136

Qy        718 TAGGA------------------CAGGGAGGCCAGGGAAGAGGTGGGTT--GGGGAG-- 754
               ||||                  | || || ||  | |   || ||| |  ||| ||
Db        135 CAGGAAGCGGTCGGAGATGGGCCGCTGGCAGCCCTCGCAGACGGCGGGATGCGGGCAGTC 76
```

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Qy        755 GGAGTTTTGTTG--------GGGATGCTGTTGTATAATGATATGGTGTAGCTCAGCATTT 806
              ||||    |  |        |||  || |  |      |  | ||    ||||  |  |
Db         75 GGAGCCCAGCAGCACCCCCAGGGTGGCGG--GCCCGGGGCGAAGGGCGTGCTCCTCCATC 18

Qy        807 CCAAAGACTGAATACAT 823
                 | | |     ||||
Db         17 TTGATGCCGTCCAACAT 1
```

Smidt performed the assays on tissue slices, which comprise cellular samples, including the ventral midbrain; see for example Figure 1. The reference therefore teaches every element of claim 1. Furthermore, Smidt teaches the step of contacting the cellular samples with antibodies that bind to Ptx3 (see Figure 2d), anticipating claim 9.

Applicant argued that the amendment to recite certain specific hybridization conditions is sufficient to overcome the rejection. The examiner respectfully disagrees and notes that the three alignments shown above indicate that the sequences will hybridize. Note in particular the multiple long stretches of sequence identity in the first two alignments (i.e. SEQ ID NO:13 and 15). The USPTO does not have the resources to test the specific hybridization kinetics and parameters recited in the present claim. Given the large degree of sequence identity, the property of hybridization to applicant's recited SEQ ID NOs appears to be inherent to the nucleic acid used by Smidt. Absent evidence to the contrary (for example in the form of a declaration which shows that the prior art nucleic acids do not hybridize under the recited conditions) the property is presumed to be inherent. The reference anticipates each of claims 1 and 9.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 9-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smidt 2000 (Nature Neuroscience 3:337-341) in view of Holzschuh 2001 (Mechanisms of Development 101:237-243).

This rejection is maintained for the reasons previously made of record. The reasons why claims 1 and 9 are anticipated by Smidt are set forth above. Briefly, the reference teaches contacting a cellular sample with a nucleic acid that will hybridize to one or more of the nucleic acids listed in the claims to detect dopaminergic neurons, and also teaches detecting Ptx3 to confirm that a dopaminergic neuron is present. However Smidt does not teach detecting DAT as recited in claim 10 and 12.

Holzschuh teaches that DAT (dopamine transporter) is expressed in dopaminergic neurons, and that this marker can be used to distinguish truly dopaminergic cells from other catecholamine-containing cells. However Holzschuh does not teach the method of claims 1 or 9 or the product of claim 3.

It would have been obvious to one of ordinary skill in the art to modify the methods set forth by Smidt to include the steps taught by Holzschuh, thereby arriving at the invention recited in claims 10 and 12. Doing so would have been advantageous, Holzschuh teaches that DAT is particularly useful to identify dopaminergic neurons.

Applicant did not traverse the examiner's determination that the reference by Holzschuh renders obvious the specific limitations of claims 10 and 12. Rather applicant argued that the reference by Smidt does not teach the method recited in claim 9 or in part (a) of claim 12. The examiner respectfully disagrees, and notes that the reasons why Smidt teaches those particular limitations is set forth in the rejection under 35 USC 102(b) above.

Rejections Necessitated by Amendment

Claim Rejections - 35 USC § 103

5. Claims 1, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smidt 2000.

The reasons why claims 1 and 9 are anticipated by Smidt are set forth above. Not only does Smidt teach detection of nucleic acids that hybridize to SEQ ID NO:13, 15, and 17, the reference also teaches detection of Nurr1 in dopaminergic neurons; see for example Figure 5

and p. 338, second column, first complete paragraph. Therefore it would have been obvious to one of ordinary skill in the art to also detect Nurr1 as recited in claim 11. The motivation to do so would be to confirm that the detected neurons are in fact dopaminergic.

Conclusion

6. Claims 1 and 9-12 are rejected.

7. Claims 27-31 are allowed.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL KOLKER whose telephone number is (571)272-3181. The examiner can normally be reached on Mon - Fri 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker can be reached on (571) 272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel E. Kolker/
Primary Examiner, Art Unit 1649
March 18, 2010